

Cyperus rotundus

Cyperus rotundus is often described as being the worst weed in the world. This species is mainly propagated vegetatively, through development of a large network of tubers that extend along the length of the rhizomes, thus facilitating infestations. Measures must be taken to curb the spread of *C. rotundus* once it appears. Specific herbicide spot treatments should thus be conducted before the infestation becomes serious enough to necessitate heavy overall treatments.

P. MARNOTTE
CIRAD-CA, BP 5035
34032 Montpellier Cedex 1, France

Control after field preparation

Control of *C. rotundus* should generally be scheduled before cropping and carried out as a standard field preparation operation.

The extent of *C. rotundus* infestation can be reduced by mechanical control methods. At the very beginning of the dry season, tubers can be unearthed by deep ploughing, after which they will dry out under the sun. The chains of tubers can then be removed by harrowing. This operation must be repeated several times to eliminate the entire *C. rotundus* population.



Non-selective systemic herbicides can reach and destroy *C. rotundus* tubers. The reference treatment involves post-emergence spraying of glyphosate at a dose of 2 160 g/ha. This treatment should be carried out at

Botanical name: *Cyperus rotundus* L.

Family: Cyperaceae

Class: Monocotyledons

French common name: souchet

English common name: nutsedge

Cosmopolitan distribution in tropical and Mediterranean regions

Vegetative propagation: tubers

International code: CYPRO

the onset of the *C. rotundus* flowering period to induce maximum herbicide circulation through the plant. In addition, several treatments are often necessary to destroy successively emerging dormant tubers. Table 1 gives the characteristics of non-selective herbicide products that can be used.

What to do during cropping

In some cases, herbicide applications can limit the growth of *C. rotundus* populations during the cropping cycle, e.g. pre-planting treatments of maize croplands, or post-emergence treatments of grass crops.

● Pre-planting treatments

Pre-planting treatments of maize croplands are done with photodegradable and volatile carbamate products. At the time of treatment, they therefore have to be rapidly incorporated into the soil by mechanical burying. These products are described in Table 2.

● Post-emergence treatments

Post-emergence treatments of grass croplands (rice, maize, sugarcane, etc.) are done with the products described in Table 3. These selective post-emergence products do not completely eliminate *C. rotundus* populations. However, aerial parts of the weeds are destroyed during cultivation. The aggressiveness of the weed, which is highly sensitive to shade, is thus sufficiently reduced to give the cultivated plant a competitive edge over the invading weed.

Table 1. Non-selective, systemic, post-emergence herbicides that are effective against *Cyperus rotundus*.

Active ingredient	Commercial name	Concentration (g/l)	Manufacturer	Dose active ingredient (g/ha)	Dose commercial product (l/ha)
Reference glyphosate	Round-up	360	Monsanto	2 160	6
glufosinate	Basta	200	Hoechst	2 000	10
imazapyr (residual)	Arsenal	75	Cyanamid	450	6
glufosinate	Basta	200	Hoechst	1 000	5
(+) imazapyr	(+) Arsenal	75	Cyanamid	(+) 225	(+) 3
sulfosate	Ouragan	480	ICI	1 920	4

(+): extemporaneous mixture.

Weed control

Table 2. Pre-planting herbicides used to treat maize cropfields against *Cyperus rotundus*.

Active ingredient	Commercial name	Concentration (g/l)	Manufacturer	Dose active ingredient (g/ha)	Dose commercial product (l/ha)
vernolate (+ protector)	Surpass	480	Stauffer	3 360	7
EPTC	Capsolane	360	La Quinoléine	3 600	10

Table 3. Selective post-emergence herbicides that are efficient in controlling *Cyperus rotundus*.

Crop	Active ingredient	Commercial name	Concentration (g/l)	Manufacturer	Dose active ingredient (g/ha)	Dose commercial product (l/ha)
Rice	2,4-D	many formulations	720	-	1 440	2
	bentazone + propanil	Basagran PL2	160 + 340	BASF	960 + 2 040	6
	triclopyr + propanil	Garil	72 + 360	Dow Elanco	360 + 1 800	5
	triclopyr		120		240	
	2,4-D	Turflon	+ 240	Dow Elanco	+ 480	2
Maize	bentazone		260		520	
	dichlorprop	Basagran DP	+ 340	BASF	+ 680	2
	fluroxypyr	Starane	200	Dow Elanco	300	1.5
Sugarcane	ioxynil		100	Rhône-Poulenc	150	
	+ 2,4-D	ActrilDS	+ 600		+ 900	1.5

Non-selective herbicides: instructions for use

■ Systemic products

Systemic products, which are transported through plants by the sap, are quite slow-acting. It is therefore very important not to disturb the treated weed population (e.g. by mechanical interventions or weeding) for at least 15 days.

■ Glyphosate, glufosinate, sulfosate

In addition, glyphosate, glufosinate and sulfosate only penetrate the leaves, and have no residual effect. It is therefore possible to plant a crop as early as the day after the herbicide application, except in extremely sandy soils where the product can dissolve in the soil solution and destroy the young seedlings at germination.

■ Imazapyr

Imazapyr, in contrast, penetrates both the leaves and roots and remains persistent in the soil. It is essential to delay cropping after applications with this product. The length of this delay will depend on soil conditions, climate and cropping practices, but can be as long as several months.

■ Adding a surfactant

For glyphosate, adding a surfactant improves penetration of the product through the leaf cuticles, thus lowering the application dose.

■ Splitting the dose

Splitting the dose, and conducting two applications with an interval of about 10 days, will destroy *C. rotundus* plants that were not very developed during the first treatment.

Commelina benghalensis

T. LE BOURGEOIS, P. MARNOTTE
CIRAD-CA, BP 5035,
34032 Montpellier Cedex 1, France

A major weed of intensively cropped cotton fields

Commelina benghalensis is an annual weed species that develops in extended clumps, with ascending shoots at the tips. The thick cylindri-

cal stems bear oval-lanceolate leaves with red hairs on the margins of the false petiole. The pale-blue aerial flowers are arranged in groups of three or four in triangular foliated spathes. The white underground stems bear underground flowers which do not open. Seeds are thus produced both underground and aboveground.

Botanical name:

Commelina benghalensis L.

Family: Commelinaceae

Class: Monocotyledons

Distribution: humid tropical regions

International code: COMBE

Sexual propagation:

aerial and underground seeds

Vegetative propagation:

cuttings, layering.

C. benghalensis has high vegetative propagation potential via layering or branch cuttings.